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SICK BUILDINGS, POOR DESIGN AND PUBLIC HEATH

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Keywords: Poor Design, Sick Buildings, Public Health

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Abstract

There is no doubt that there is a close relationship between health problems and housing conditions. According to the World Health Organization (WHO) estimates in developing countries those 2 million early and unexpected deaths, with close to half occurring among children less than 5 years old die from indoor air pollution and bad housing. Housing is an important determinant of health, and substandard housing is a major public health issue. Designing and bad orientation of housing are found to have significant effects on poor respiratory health especially in children, and increase an infectious disease thereby putting them at higher risk of life-threatening diseases. The rate of spreading the diseases among children is increasing in developing countries in last years which form serious threats to public health and natural growth of children and inturn reflect on average of long life especially in Poor Urban Region and low socio-economic families. The research examined the relationship between housing and health using longitudinal data collecting and analyzing data from Chest Hospital records and giving a questionnaire to inhabitants who suffered from respiratory illness as a result of bad design and inadequate orientation…etc. For many children this means losing sleep, restricted physical activity, slow growth, and missing school. The research submits a criterion to redesign public housing especially the low incoming housing and employ the internal and external determinants as ventilation rates, percentages of voids, orientation, finishing materials and physical infrastructure…. etc. and many other factors which affect public health to improve environmental quality, assessing housing conditions and affordable housing. Now, it is the time to create healthier homes by confronting substandard housing for creating a healthy generation.

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ABSTRACT

There is no doubt that there is a close relationship between health problems and housing conditions. According to the World Health Organization (WHO) estimates in developing countries those 2 million early and unexpected deaths, with close to half occurring among children less than 5 years old die from indoor air pollution and bad housing.

Housing is an important determinant of health, and substandard housing is a major public health issue. Designing and bad orientation of housing are found to have significant effects on poor respiratory health especially in children, and increase an infectious disease thereby putting them at higher risk of life-threatening diseases. The rate of spreading the diseases among children is increasing in developing countries in last years which form serious threats to public health and natural growth of children and inturn reflect on average of long life especially in Poor Urban Region and low socio-economic families.

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KEYWORDS

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1. INTRODUCTION

Childhood is the most precious time of life, it is a time of rapid development when experiences shape adults whole life. A child's healthy growth and development are dependent on many factors, including the immediate environment in which they live. More recently, researches have shown that children who live in neighborhoods classified as "urban local authority housing" are more likely than others to experience respiratory illness. The numbers of populations who suffered from respiratory and chest diseases are increasing day by day especially in developing countries.

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The research gives an answer to the question: What does bad housing mean for our children … Data indicates that up to 5 per cent higher risk of severe ill-health and disability during childhood and increased risk of meningitis, asthma, and slow growth, which is linked to coronary heart disease, and a greater chance of suffering from mental health problems and problems with behavior, Therefore lower educational attainment, greater likelihood of unemployment, and poverty.

The relationship between health, population and the housing in which they live is very critical … It has changed dramatically in recent years especially in low socio-economic housing. A majority of the human population now lives in urban areas, with the rate of population growth in low-income countries four times faster than in high-income countries. Cities in developing nations are surrounded by makeshift settlements plagued with poor sanitation and lack of housing (WHO, 2010).

A child's healthy growth and development are dependent on many factors, including the immediate environment in which they live…This 'housing effect' is especially pronounced in relation to health. Children living in poor or overcrowded conditions are more likely to have respiratory problems, to be at risk of infections, and have mental health problems... For example, more than one million children suffer from bad housing in England today. In comparison with the percentage in Egypt and developing countries the number increase from 5:7 times means one in four children. In Egypt about 5 million children are deprived of appropriate housing conditions (including shelter, water and sanitation) and1.6 million children under 5 years suffer health and food deprivation. (UNCIEF, 2013).

2. LOW SOCIO-ECONOMIC HOUSING CHARACTERS

Socio- economic status (SES) is often measured as a combination of education, income and occupation. It is commonly conceptualized as the social standing or class of an individual or group. The urban poor are normally associated with low levels of education, lack of employment opportunities, large family size, and poor housing conditions. They are also more exposed to health hazards due to crowded living conditions and the sick building syndrome. Findings from numerous studies showed a significant positive relationship between housing conditions and chronic illnesses (P. Mccarthy, 2000). Many Reports still identified housing as one of the major causes of ill-health and record that governmental housing is the least healthy form of tenure." The Black Report on Inequalities in Health" Where the majority of the global poor live in rural areas and are poorly educated, mostly employed in the agricultural sector and nonpermanent jobs (daily wages), and over half are under 18 years of age. (World Bank Report).

3. QUALITY OF LIFE AND SICK BUILDINGS

The quality of life and affordable housing is considered a major factor that contributes to public health problems and average human ages. The urban poor seemed to have the highest health risk in both under developed and developing countries. Lower income and poor living conditions are usually related to poor health status, where living in health-threatening homes and neighborhoods and suffered from inadequate provision of health care. In many studies, housing condition emerged as a significant predictor of general and mental health status (Navarro et al., 2010, Adarkwa & Oppong, 2007). Specifically, overcrowded housing is found to have significant effects on poor respiratory health in children (ODPM 2004) (Chaudhuri, 2004), and an increase in infectious diseases thereby putting them at higher risk of life-threatening diseases (Baker et al., 2000). The World Health Organization describes the sick building syndrome as a group of housing which suffer from many fatal internal or external environmentally problem called sick buildings such as bad orientation, inadequate ventilation, continuous physical problem from sanitation, sewage, humidity, dump and mold which can be caused by poor design as low ceiling, lack of windows or air wells, and too proximity with the other building next to it, all of which are very apparent in most low- cost housing in the world.

The quality of life was measured by four dimensions: health status, personal safety, existing social support and involvement in social activities. A high number of respondents (52%) claimed of having chronic illness but only 13% were seeking hospital treatments for their illnesses. This could either be due to their financial constraints or lack of knowledge on the cost of the treatment. On a poverty scale of 1 to

10 where 1 stands for 'very poor' and 10 stands for 'not poor', almost 60 percent ranked themselves as below 3. However, 50 percent also reported an increase in their living standards for the past two years.

4. MATERIAL AND METHODS

The study included a survey among occupants of local authority accommodation in one of metropolitan districts located in the north-east of Egypt called Elmahallah Al-kobrah city. The site is on the opposite direction of ring road of Al-Mahallah –Talkha and Chest Hospital. The selective site suffered from bad environments and is exposed to many external and internal threats as landfill and burning site in north -west direction as shown in fig. (1)

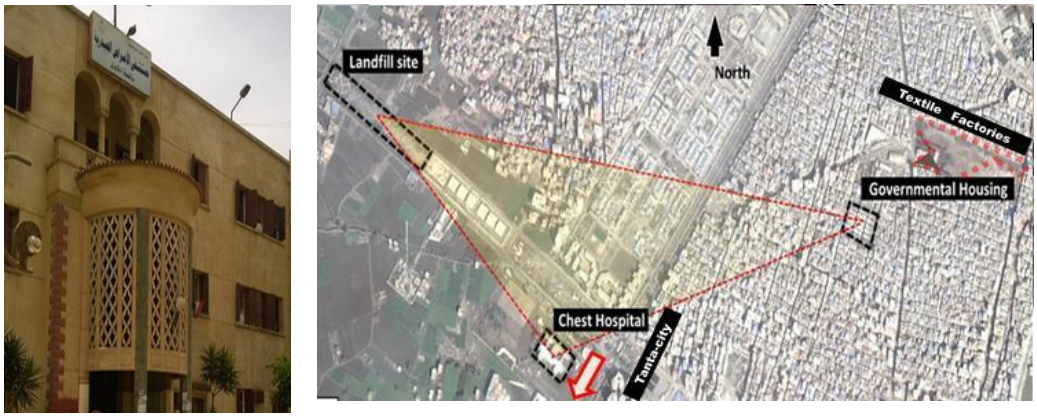


Fig. 1 Google Map 2017 of Selective Governmental Site
Source: Researchers

The site contains 18 blocks each one includes 20 flats in five level ... the total area of each flat is about 60:65 m2 as fig.(2) and the occupancy rate between 5 to 7 persons … the average number of people in these areas is about 2100 adults and 625 children about (30%) among 2:16 years in 360 households as fig.(3). This agrees with (WHO) report that Egypt has a children population of approximately 28 million. They form one-third of Egypt's population today and over one-fifth of Egypt's children are growing up in poverty.

Fig. 2 Plan of Typical Floor of Governmental Housing
Source: Researchers

Fig. 3 Façade of Governmental Housing
Source: Researchers

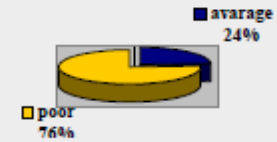
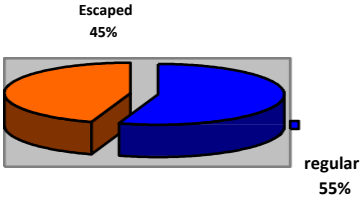
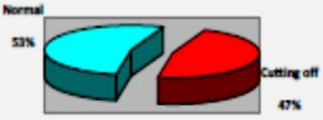
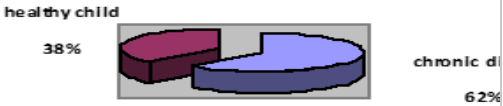
5. ANALYSIS " STUDIES ABOUT THE SELECTIVE SITE"

The study is based on recent data collected from Chest Hospital and Supreme Council of the City and was taken to reflect the effect of environmental agents and design elements as ventilation rate &orientation of the blocks and rate of crowding. The low level of living standard may lead to spreading chest diseases in the squatters and low-cost flat households in Al-Mahala City "Algomhorya district".

To collect the primary data about the level of living condition of urban poor district, a structured questionnaire was developed, and involved improvements based on giving many visits for several times around the area of study, repeated interviews, discussions among the responsible staff, inhabitants and clinical examination for children within range 2 1o 16 to detect any chest problems and divide them to groups according the diseases.

The research records some determinants which contribute to quality of life and living standard of the selective area such as: social, economic, environmental and physical environment …etc. as shown in table (1). These are social, crime, physical, and economic dimensions. This grouping scheme puts together variables that are related and work together in affecting neighborhood-scale quality of life.

Table 1: Determinants effecting on Quality of life and Living Standard of Selective Area

.Determinants	Current situation	Statistics
Family income	The average income between 360 household, the research record more than 274 flats under poverty line ... According to the most recent estimates in 2013, the average of world poverty line in developing country is $3.10 a day.	 That's means 76% of inhabitants living under poverty line.
Education Level	Between total number of children 625 in selective site was exclude 15 % under 6 years and the statistic refer to the percentage between 6:16 years there are 201 child leaked out from education.	 About 45% of children from the total number have leaked out of education
Physical Environment	Cut off the electricity, water, sewage clogged and other infrastructure problems about14 days per month.	 About 53% days in month ... people in si suffered from physical problems
Health State	Many people who suffered from chronic disease's especially chest and other respiratory problems about 140 children from 225.	 About 62% from total children suffered from chronic respiratory diseases.

The previous table presents the effect of various dimension on determining the living standard and spreading the diseases among inhabitants and confirms the influence of environment and the impact of bad housing conditions and unhealthy habits on public health. The result indicates that up to 25 per cent higher risk of severe ill-health and disability during childhood and early adulthood. (Harker, 2006) Acute respiratory diseases account for more than 2 million deaths a year among children (HiV/ AiDs 2008), according to the World Health Organization. These diseases are exacerbated by cigarette smoke, poor ventilation, dust mites, mold and fungus in the home.

DISCUSSIONS

The Main Factors of Infection:

There are many factors that contribute to healthy housing (partly governed by building regulation), where limited trade-offs in design. The survey records the main agents which effect on spreading the infection of diseases and lead to serious medical problems and it is sometimes turn to fatal cases. Respiratory disorders may be the combined outcome of working in a dirty atmosphere, crowded ratio, finishing materials, breathing polluted inner-air, inadequate ventilation, smoking, and living in a damp, mold and draughty house (McCARTHY, 2000) which form a great threat to public health of inhabitants especially in children.

5.1. Orientation of the Residential Blocks:

By studying the wind direction inside the site ... the analysis noticed that it was inclined to the right direction where the residential blocks tend to angle from 20 to 30 degrees in the direction of anticipating winds as shown fig. (4). The site may be planned with the line of the street organization limit where the short façade interfaces the direction of wind, leaving vertical spaces between the blocks to increases the possibility of using natural ventilation passing through buildings. From the site analysis, there is the landfill site in the direction of wind is considered the main dangerous point which affects the quality of wind carrying out many pollutants components as first and second carbon dioxide, fumes and other contaminants that make them sicky wind. Hence, this agent can affect directly many chest diseases as bronchitis, pneumonia, tuberculosis (T.B).

Fig. 4 The Direction of Blocks in Site between 20 -30 that allow the angle of winds pass

5.2. Ventilation Rate:

Inadequate ventilation is related to a higher risk of airborne infectious disease transmission, including tuberculosis (T.B) as well as the accumulation of indoor pollutants and dampness, which are factors in the development of allergies and asthma. Poor housing quality and design also can exacerbate the health impacts from exposure to temperature extremes, which are occurring more frequently due to climate change.

The flow regimes associated with airflow over building arrays of increased S/L where s: the distance between blocks and L: is the depth in the case study we find space between buildings is very small and narrow where S<L as indicated in fig. (5) and the space between housing blocks don't less than 1/3 total height of blocks. which impedes the movement of wind direction within the left space and increases the coefficient of blockage ratio φ and reduces the flow and speed of the movement of wind and reduced outdoor air ventilation rates were found to be inadequate to maintain the health and comfort of building occupants and people started getting sick from buildings where the ventilation standards approximately 15 cubic feet per minute (cfm) of outside air for each building occupant … Preferably increase the space between blocks S>L as shown in fig. (6) (Research and Development Environment Agency, l991).

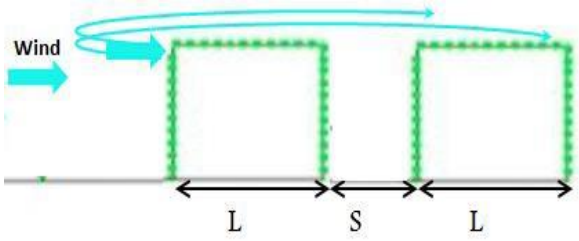


Fig. 5 The case study S <1

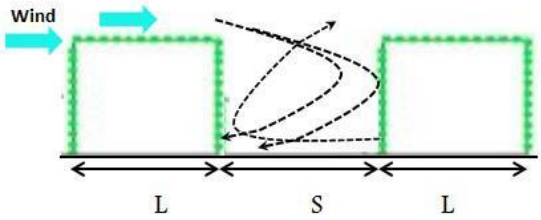


Fig. 6 The appropriate Distance Blocks Between Buildings Study S>1

5.3. Overcrowding:

Children living in overcrowded and unfit conditions are more likely to experience respiratory problems such as coughing and asthmatic wheezing. For many children this means losing sleep,restricted physical activity, and missing school. Over a lifetime, overcrowded homes have been linked with slow growth in children which correlates with an increased risk of heart disease as an adult (UNCIFE 2013).

It could be an indicator and a result of poverty and poor housing Hundreds of thousands of children are living in homes that are too small to allow them space to live in normal standards of hygiene and privacy. The collected data show that houses with six residents are the fastest growing category of household … WHO defined Overcrowding as more than two persons per room has been identified as the most frequently cited indicator of housing condition among the urban poor (Pevalin, Taylor & Todd, 2008).

In the case study, children living in dwellings with five or more people per room, with no flooring material. The research records the overcrowding rate between 5:7 children per flat. In most cases then parents share a bedroom with their children and in most living rooms are used as bedrooms as an unfit condition which consider the main cause of many respiratory infections and activation of tuberculosis. (Bull World Health Organ, 1996).

5.4. Physical Environment and Biological Pollutants:

Biological contaminants as pollen, mold, species of microorganisms that live on pillows, bedding and furniture, and causes permanent allergies. Wet surfaces are considered a breeding for growth bacteria and mildew, Sinus, and fungus which causes infections and nervous tension and mucous membranes (Harker, 2006). The effect of these pollutants can be minimized by adjusting the level of humidity inside the houses, thus avoiding water condensation on the walls and windows. For this purpose, relative humidity is recommended between 30-50%.

A study records most cases whose living in damp houses as fig. (7 a) were more infection where damp and mold tend to be the worst in over-crowded dwellings, often occupied by families of low socio- economic status… However, damp and mold have repeatedly been linked to respiratory symptoms, as Nausea, vomiting and general ill health such as asthma.

Children who live in damp, moldy homes are between 1.5: 3 times more prone to coughing and wheezing. Damp conditions are favorable to bacteria and viruses; and mold fungi produce allergens that can lead to asthma and other respiratory problems such symptoms can lead to sleep loss, restrictions on children's daily activities, and absence from school, all of which have long-term implications for a child's personal growth (Strachan, 1991), where exposed to bad sanitation and dirty air is re-circulated indoors where flats in low or medium rise were worse than high rise flats as fig. (8). the humidity increase and cause condensation, which encourages the growth of fungal spores and increase the dust mites.

A study undertaken found that children aged 2 to 16 living in damp houses were more liable to infection and at risk of a wheezing illness such as asthma, and experience frequent respiratory problems at night where exposed to bad sanitation and dirty air is re-circulated indoors where flats in low or medium rise were worse than high rise flats as fig. (7 b,c) the humidity increase and cause condensation which encourages the growth of fungal spores and increase the dust mites.

Fig. 7 (a)

Fig. 7 (b)

Fig. 7 (c)

Fig. 7 (a), (b), &(c) Bad Simulation Surrounded the Blocks and Full Entrance
Source: Captured by authors

5.5.Construction and Finishing Materials:

Homes were built before 1960 were most likely painted inside and outside with lead-based paint. Newer homes, particularly those built before 1980, may also contain lead paint as fig. (8). It is not likely that paints containing high levels of lead were used inside the home after 1980…. According to the World Health Organization, these exposures are responsible for nearly 2 million premature deaths, with close to half occurring among children under 5 years old and affect their intelligence, personalities, and in some cases lives are threatened.

Fig. 8 Using the Lead in Painting Material

-Lead paint removal and allergen relief may require intense interventions such as window and carpet replacement and integrated pest management. While these measures may carry a higher upfront price tag. Formaldehyde also is an important vehicle used extensively in the manufacture of building materials, furniture and manufactured materials such as adhesives, glues and preservatives in paints. Compressed wood is one of the most important sources of formaldehyde at homes because it contains an adhesive based on urea-form aldehyde that causes respiratory tract infections and headaches.

5.6. Air Quality "Smoking":

The World Health Organization's 2002 report classified the problem of indoor air pollution after water pollution and sanitation as the most health and environmental problems that pose health risks in developing countries. Indoor air pollution kills 1.5 million people around the world each year, because the key to human health is clean air, and the amount of air entering the human body about 15 thousand liters per day. But it spends 90% of its time in closed and poorly ventilated buildings, so our houses contain dozens of contaminants responsible for many respiratory diseases. When insufficient air enters the house, the pollutants accumulate in the trapped air to reach 70 times higher than the air on the street and to the limits of causing health problems.

Significantly, poor air quality has been found to be associated with socioeconomic status, with people living in more deprived areas often at greater risk of harm (Deguen, 2010). Poor air quality has been associated with heightened asthmatic symptoms. For indoor air quality: WHO identified five main indoor air substances that have harmful effects: radon, environmental tobacco smoke, cooking pollutants, volatile organic compounds and asbestos, all of which have been linked to respiratory diseases USEPA, 2008).

6. RESULTS

Respiratory Tract Problems among Children

The research records the chest and respiratory diseases between children in selective region, which form about third number of population as fig. (9) and records a high percentage of illness and most of symptoms are related whether direct or indirect reason on housing design or surrounding environment area as fig. (10) The previous studies records the reasons of the problem and the factors which most affect health. The research examined the relationship between housing and health over time using longitudinal data along the year and analysis the collecting data from Chest Hospital Records and a questionnaire given to children who suffered from respiratory illness as a result from bad design and inadequate orientation…etc. For many children this means losing sleep, restricted physical activity, slow growth, and missing school. More than 1.7 million small children die every year from diarrheal diseases brought on by improper sanitation and lack of access to clean water (WHO, 2005).

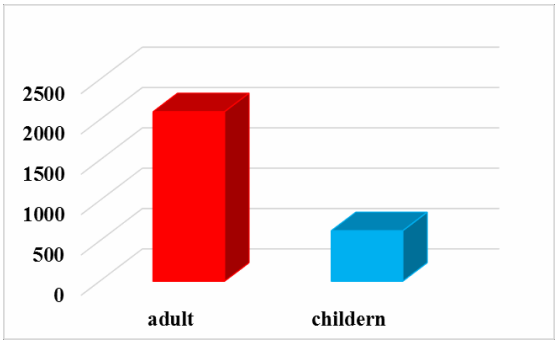


Fig. 9 Number of Children to Adults
Source: Researchers Column Break

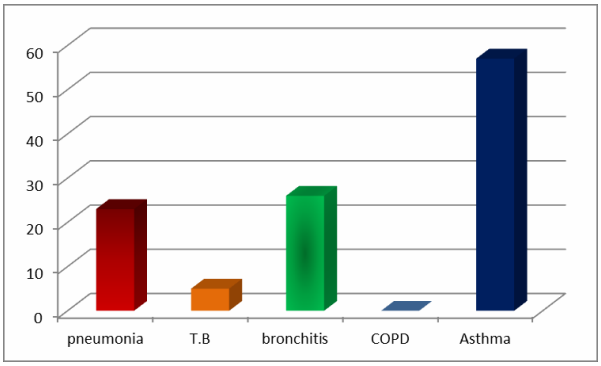


Fig. 10 Respiratory Tracts Problems among Children
Source: Researchers

The presented data refer to total affected children less than 16 year are 336 children. Most of them are bronchial asthma about 57% of the cases, then bronchitis and pneumonia then tuberculosis (T.B) and no cases with Chronic obstructive pulmonary disease (COPD). That's more than estimates of the United Nations that record most Poor housing conditions increase the risk of severe ill-health or disability by up to 25 per cent during childhood and early adulthood. And 10 million people worldwide die each year from conditions related to substandard housing (Steven K. Galston, 2009).

The Questionnaire estimated that winter season from December to March is the most infected months among inhabitants and cold are attributable to the direct effects as fig. (11). Although limited, there is some evidence (and good theoretical grounds) to suggest that vulnerability to cold is greater in homes with inadequate insulation inadequate home heating and cold considered where the cold temperatures affect lower resistance to respiratory infections as flew, Asthma and TB (Harker 2006).

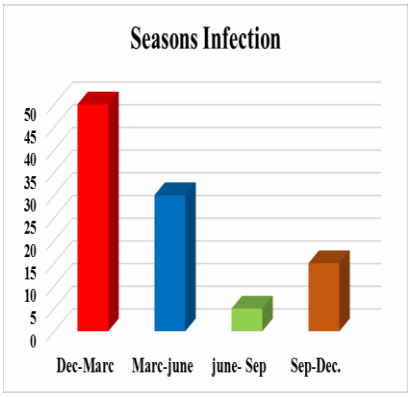


Fig. 11 Show the Percentage of the Respiratory Diseases in Different Months of the Year
Source: Researchers

Table 2. The Relation between Different Agents and Respiratory Diseases
Reference: Researches

AGENTS	Pneumonia	T.B	Bronchitis	COPD	Asthma
Orientation & Rate of ventilation	**2**	**3**	**0**	**1**	**3**
Biological pollutants "Damp & Mold"	2	2	3	1	3
Construction and Finishing materials	2	0	0	1	3
Air quality "smoking"	2	2	1	3	3
Bad nutrition	1	2	0	1	1
Overcrowding	2	3	0	3	2
Sanitation and physical environment	2	2	1	1	2

0 No relation - (1) Mild - (2) Moderate - (3) Severe

The Previous Table Refer to the Following Results:

Asthma is triggered by several environmental factors, particularly air quality affected by residential heating sources and indoor allergens. Poor air quality and poorly maintained housing may be overrun with mold, dust mites, cockroaches, or rodents—all of which are sources of allergens that cause asthma. Bronchiolitis in the first and second year lead to the development of Asthma later. Chronic obstructive pulmonary disease is developed later in adult life due to long exposure to smoking, dust. Mold and finishing material.

- Finishing materials and Lead paint removal and allergen relief may require intense interventions such as window and carpet replacement and integrated pest management. While these measures may carry a higher upfront price tag.
- Incidence of Pneumonia and bronchitis among children in this area are high because of bad sanitary life, spread of infections and overcrowded. Individuals who live in a crowded setting may have limited ability to manage daily stressors and successfully maintain supportive relationships, which can lead to increase levels of psychological distress, feelings of helplessness, increased exposure to infections and even higher blood pressure.
- Asthma attacks can be linked to pests, pet dander, dust, molds and excessive moisture inside the home, and housing instability or homelessness where the research recorded that the low or medium flats were worse than high-rise flats.

There is a direct link between Tuberculosis (TB) and overcrowding. TB can lead to serious health complications, including problems with the lungs and kidneys, and even death.

The following table show the relation between respiratory diseases and various agents of internal and external factors.

7. VISION FOR CHANGE:

This study is considered an initiation to take an action to improve the governmental and low socio-economic housing when we will start to establish a new governmental housing and solve a current housing crisis without create opposite crisis for those who live:

- Choosing the site carefully and design stage should have the top priority in the upcoming projects.
- Taking consideration to keep pace with various social, economic, demographic and environmental changes that will shape the way in which places are planned and designed.
- Considering the environmental aspect from orientation the buildings in the site and spacing between buildings which can reduce the possibility that pollutants from one will be re- ingested by another."
- Dump and mold are considered the most dangerous agents, which threat the public health in low socio-economic families, so people required insulated, dry and warm houses to meet the needs of inhabitants especially in the lower floors because they are highly exposed to humidity.
- Transforming the polluted activities and landfill site outside the city at a distance not less than 10 kilometers in the south direction of the city.
- Following-up children who suffer from infectious and frequent symptoms of diseases to avoid turn them into chronic diseases and serious complications.
- It is necessary to make plans to carry out a periodically maintenance to raise the hygiene among inhabitants.

Arranging and shifting the units in the site leaving a frontier spaces to Create a high-pressure (+) zone and a low-pressure zone (-) to obtain a ventilation bridge (90 ° air circulation) as fig (12) that construction of external walls graduated gradient to guide the air within the units or the granularization of spaces to achieve the same result and benefit from the ventilating phrase and protection from solar radiation at the same time. As for the position of the openings, it is preferable that the wind be tilted on the entry hole where the air passes through the vacuum of the room and increases the flow of air in the sides and elements, thus achieving a more homogeneous ventilation. As for the arguments of the openings, not less than 1/8 of the room. Square meter and aperture area of 1.25 square meters which affects natural ventilation and the quantity and flow of air inside the room.

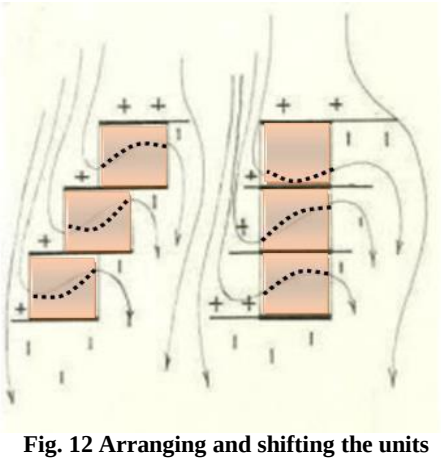
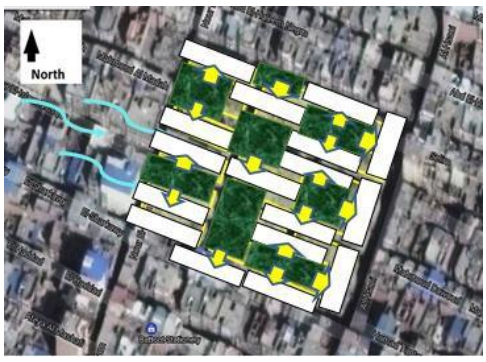


Fig. 12 Arranging and shifting the units

- Modifying the percentage of windows areas were designed to exceed the minimum requirement for the natural lighting, as the WWR was 15% of the service spaces and 20% of the living spaces. (Shamseldien, 2017).
- Rearranging the residential block inside the site and take a time for putting on alternative solution to achieve many environmental, social and economic aspects through establishing a collective public space between blocks and arrange the blocks interchangeably to maximize ventilation and natural lighting as well as privacy consideration as indicated in fig. (13).



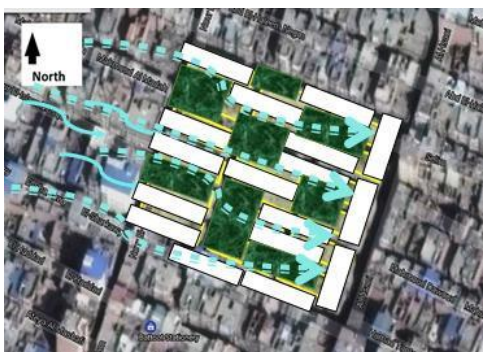


Fig. 13 The Rearrange of Open Spaces and Blocks

The research presents a different formation of residential blocks with preserve of same shape and Dimension of unit within the sites. The suggested design takes into consideration the privacy of the entrances and the direction of the wind to achieve the highest functional and exploitative value of the spaces and the land. At the same time, the formation is considering the emotional and psychological needs of the inhabitants.

The main features of the formation are based on the psychological and emotional impact of the population and transform the region into a variable and renewable system through the network of public spaces associated with the network of movement, taking into account the criteria of land division and building densities, depending on the quality of ventilation, lighting, movement and finding areas responses in front, back and side, which are the necessary inter-spaces, to reduce pollution through the surfaces and improve the climatic conditions through environmental treatment and vacuum rates achieved, leaving open paths for the movement of the prevailing air to reach to all residential blocks and provide the shadows and privacy required.

8. CONCLUSION

The current research displays a strong evidence of a clear 'housing effect' on areas of children's life and public health. House does not exist in isolation ... It is part of a larger community; bad housing and Poor children who have chronic diseases that require ongoing health care may be hospitalized at much greater expense if family housing cannot be upgraded.

- It exists in the public-sector stock of housing forms, which are almost used in different sites with same models neglecting other consideration from environmental, urban, social conditions.
- Quality of life and health status are influenced by the physical environmental and socio-economic standard. Significantly, poor air quality has been found to be associated with socioeconomic status, with people living in more deprived areas who are often at greater risk of harm.
- Most common chest diseases in children who live in overcrowded homes may be caused by an increased incidence of infectious disease and result from ventilation and air circulation whether indoor and outdoor.
- Poor housing conditions have a damaging impact on children's learning. Children living in overcrowded or damp accommodation are more likely to miss school. Built the health is apart from built the society no home built without healthy people, Therefore the needs of humans are considered a major priority in design and it is necessary to take into consideration the needs of low socio-economic people and pay more attention to children and their health to build a healthy community.

REFERENCE

- AcE-Bs (2012) Bangkok ASEAN Conference on Environment-Behavior Studies, Bangkok, Thailand, 16-18 July 2012.
- BROWN G. (1985). Sun, Wind, and Light. Architectural Design Strategies. Second Edition. ISBN-13: 978-0471820635. Library of Congress Cataloging. USA.
- Bonnefoy X, Annesi-Maesano I, Aznar L, Braubach M, Croxford B, Davidson M, Ezratty V, Fredouille J, Gonzalez-Gross M, van Kamp I, Maschke C, Mesbah M, Moissonnier B, Monolbaev K, Moore R, Nicol S, Niemann H, Nygren C, Ormandy D, Röbbel N, Rudnai P. (2004). A Review of Evidence on Housing and Health. Background Document for the Fourth Ministerial Conference on Environment and Health. Budapest: WHO Regional Office for Europe.
- Center for Economic and Financial research and Studies (2010). Child Poverty and Disparities in Egypt Building the Social Infrastructure for Egypt's Future. United Nations Children's Fund (UNICEF), Egypt.
- Dedman DJ, Gunnell D, Davey Smith G, Frankel S. (2001). Childhood Housing Conditions and later Mortality in the Boyd Orr cohort. J Epidemiol Community Health. (55). p10–15.
- Deguen S., Zmirou-Navier D. (2010) Social Inequalities Resulting from Health Risks Related to Ambient Air Quality – a European Review. European Journal of Public Health.
- Fonseca W., Kirkwood BR, Victora CG, Fuchs SR, Flores JA, Misago C. (1996). Risk Factors for Childhood Pneumonia among the Urban Poor in Fortaleza, Brazil: a Case–Control Study. Bull World Health Organ.
- Givoni B. (1992). Climatic Aspects of Urban Design in Tropical Regions. Atmospheric Environment. Part B.
- Harker L. (2006). Chance of a lifetime - the impact of bad housing on children's lives- Shelter.ISBN:1-903595-64-9.
- Kregier J., Higgins Donna L. (2002), "Housing and Health: Time Again for Public Health Action", American Journal of Public Health.
- McCARTHY P., D BYRNE, S HARRISSON, AND J KEITHLEY, (2000). Health and Housing Conditions in Public Sector Housing Estates.
- National surveillance reports and UNAIDS/WHO/UNICEF, Epidemiological Fact Sheets on HIV and AIDS. July 2008.
- Peat JK., Dickerson J. and Li J. 1991. Effects of damp and mould in the home on respiratory health: a Review of the Literature, Allergy, 53, 10-1 Strachan D. Damp Housing, Mould Allergy and Childhood Asthma, Proceedings of the Royal College of Physicians in Edinburgh, 1:140-6, 1991; Peat JK, Dickerson J and Li J, Effects of Damp and Mould in the Home on Respiratory Health: a Review of the Literature, Allergy, 53, , 10-1, 199.
- Stein L. A. (1950). Study of Respiratory Tuberculosis in Relation to Housing Conditions in Edinburgh; the pre-war period. Br J Soc Med. (4):143–169.
- Strachan D. (1991). Damp Housing, Mould Allergy and Childhood Asthma, Proceedings of the Royal College of Physicians in Edinburgh, 1:140-6.
- UNICEF and Informal Settlements Development Facility (2013), Multidimensional Child Poverty in Slums and Unplanned Areas in Egypt, UNICEF Egypt and ISDF, Cairo.
- United States Environmental Protection Agency (2008). Care for your Indoor Air: A guide to Indoor Air Quality. Washington, DC: United States Environmental Protection Agency.
- World Health Organization (2010). Why Urban Health Matters. Geneva. Valid on website : http://www.who.int/iris/handle/10665/70230
- WHO World Health Report: Make Every Mother and Child Count. 2005. ISBN: 13 9789241562904
- http://www.worldbank.org/en/topic/poverty/overview.Retrived on 17-10-1017